

UNDESCRIBED SPECIES OF THE GENUS LIM-
NOPHILA FROM EASTERN NORTH AMERICA
(Tipulidae, Diptera).

PART II.

BY CHARLES P. ALEXANDER, Amherst, Mass.¹

The first part under this general title was published in this BULLETIN in 1926. In the present article, additional species of the subgenera *Ephelia* and *Phylidorea* are described. As before, the species are included in the very extensive series of Nearctic Tipulidae collected by Professor J. Speed Rogers, to whom the types have been returned except in the cases indicated in the text. Part of the type-material of *Limnophila* (*Ephelia*) *irene* was collected in Ontario and was sent to me by Mr. Curran. I wish to express my sincere thanks and appreciation to the above-mentioned entomologists for their kind co-operation in this study.

Subgenus LASIOMASTIX Osten Sacken.

***Limnophila* (*Lasiomastix*) *macrocera* *suffusa* n. subsp.**

Entirely similar to typical *macrocera* (Say), differing in the following regards:

Flagellar segments slightly more elongated. Wings with the dark pattern much more extensive, especially the markings in cells *R* and *M* which here completely cross the cells as more or less parallel-sided areas, restricting the ground-color to small spots that are smaller than the dark markings; cells *C* and *Sc* darker; anal cells more suffused. In the Georgia paratype, the wing is greatly suffused, the ground-color being reduced to a few scattered pale spots on the disk. Abdomen somewhat shorter, the individual segments being correspondingly abbreviated; tergites brown, margined laterally and caudally with brownish black.

Habitat: Southeastern United States.

Holotype, ♂, Gainesville, Alachua Co., Florida, February 28, 1922 (J. S. Rogers); No. 17. *Paratopotype*, ♂, with the type; ♂, April 2, 1922; No. 39. *Paratype*, ♀, Waycross, Georgia, May 8, 1911 (J. C. Bradley).

¹ Contribution from the Department of Entomology, Massachusetts Agricultural College.

Subgenus EPHELIA Schiner.

The discovery of two additional undescribed species of *Ephelia* brings the total number from Eastern North America to six. The chief characters for the separation of the species lie in the details of structure of the male hypopygium, especially of the outer dististyle. The accompanying set of figures will serve to show the differences in the shape of the dististyle in the six species under consideration.

KEY TO THE SPECIES OF EPHELIA IN EASTERN NORTH AMERICA.

(Based chiefly on the male sex.)

1. Wings unmarked. (Hypopygium, Fig. 1). *johnsoni* Alex.
 Wings spotted, or spotted and clouded with brown 2
2. Wing-pattern restricted to the vicinity of the veins, there being but a single dark cloud in cell *2nd A* at the end of vein *2nd A*. 3
 Wing-pattern more abundant, there being one or more dark clouds in cell *2nd A* proximad of the one at the end of vein *2nd A*. 4
3. Wings broad; male hypopygium with the outer dististyle powerfully constructed, with a large, broad-based lobe on the basal half of the outer margin (Fig. 2). *aprilina* O. S.
 Wings narrower; male hypopygium with the outer dististyle long and narrow, with a slender spinous lobe on outer half of outer margin (Fig. 3). *irene* n. sp.
4. Wing-pattern abundant, with numerous dots and clouds in the cells, including a series of three or four clouds in cell *2nd A*; male hypopygium with the outer dististyle widened distally (Fig. 5). *vernata* n. sp.
 Wing-pattern more restricted, with only one (in abnormal instances two) clouds in the outer end of cell *2nd A*; male hypopygium with the outer dististyle narrowed distally. . . 5
5. Male hypopygium with the tip of the outer dististyle prolonged into a slender lobe that is bifid at apex (Fig. 4).
 *solstitialis* Alex.
 Male hypopygium with the outer dististyle terminating in a simple acute apical spine (Fig. 6). *serotinella* Alex.

The following general notes on the geographical and seasonal ranges of these species may be given: *L. johnsoni* occurs in Ontario, New York and the northern States of New England, flying

in late May and throughout June. *L. aprilina* ranges from New York and New England, south in the mountains to North Carolina, flying in April and May. *L. irene* is known only from parts of Ontario and Michigan, flying from mid-June to mid-July. *L. vernata* is known only from the mountains of North Carolina, flying in April. *L. solstitialis* has the widest known range of any of the species, occurring from New York and New England, west to Michigan, south in the Appalachians to Tennessee and Georgia. *L. serotinella* is known only from the mountains of Tennessee, flying in early September.

***Limnophila (Ephelia) irene* n. sp.**

Male.—Length about 5.5 mm.; wing, 6–6.2 mm.

Female.—Length, 5.5–6.5 mm.; wing, 7.5–8.5 mm.

Allied to *L. (E.) aprilina* O. S., differing as follows:

Praescutal stripes relatively ill-delimited, straight, the lateral stripes not confluent with the median one; scutal lobes dark medially, the remainder of the mesonotum light gray. Pleura dark gray. Femoral apices scarcely darkened. Wings narrow. Wing-pattern as in *aprilina*, sparse but conspicuous, confined to the vicinity of the veins; a series of seven major costal blotches, the first at arculus, the third at origin of *Rs*, the fifth at the stigma; last marginal cloud at end of vein *2nd A*.

Abdominal segments bicolorous, obscure yellow, the lateral margins narrowly, the caudal margins more broadly, dark brown. Male hypopygium with the outer dististyle relatively long and narrow (Fig. 3); outer margin beyond mid-length with a small slender spinous lobe; apex of style beyond this spine broad, the outer margin with numerous sub-appressed spines, the largest spine being apical in position, gently curved. Inner dististyle with a small tubercle on outer margin, this densely provided with long yellow setae.

Habitat: Ontario, Michigan.

Holotype, ♂, E. K. Warren Preserve, Berrien Co., Michigan, July 17, 1920 (J. S. Rogers); No. 69. *Allotopotype*, ♀, No. 68. *Paratopotypes*, numerous ♂ ♀, July 7–18, 1920; Nos. 16, 18, 20, 22, 29, 43, 51, 54 and 68; July 9, 1922; No. 80. *Paratype*, ♂, Bothwell, Ontario, June 13, 1925 (G. S. Walley), in the Canadian National Collection.

This very interesting crane-fly is named in honor of Mrs. J. Speed Rogers.

Limnophila (Ephelia) vernata n. sp.

Size small (wing under 6 mm.); wings with an abundant spotted and clouded pattern, including a series of pale clouds along the length of cell *2nd A*; male hypopygium with the outer dististyle compressed, gently widened distally, broadest just before the tip.

Male.—Length, 4–4.3 mm.; wing, 5–5.5 mm.

Female.—Length, 5.3 mm.; wing, 5.8 mm.

Rostrum and palpi dark. Antennae relatively long, scape dark brown; flagellum obscure yellow, especially the basal segments; in cases the flagellum is more uniformly darker yellowish brown. Head dark brownish gray.

Mesonotal praescutum gray, variegated with narrow brown stripes and a few dots on the interspaces, the sublateral stripes narrowly confluent with the intermediate stripes behind the pseudosutural foveae; lateral stripes occupying the margins of the sclerite. Pleura gray, variegated with brown. Halteres yellow, the knobs dark brown. Legs with the coxae gray, variegated with brown; trochanters obscure yellow; femora obscure yellow, the tips narrowly and indistinctly darkened; tibiae and tarsi brownish yellow, the outer tarsal segments darker. Wings subhyaline, abundantly spotted and clouded with brown; a series of two or three clouds between the one at *h* and the large mark at the tip of Sc_1 , the second of these markings at the origin of *Rs*, the third mark sometimes lacking; largest costal marking the stigmal blotch, confluent with the markings at the fork of R_{2+3} ; abundant pale brown spots and dots in all the cells, including a series of four or five in cell *2nd A*; veins darker brown. Venation: Sc_1 ending just before the fork of *Rs*; *Rs* long, in alignment with R_{2+3} ; *r* less than its own length beyond the fork of R_{2+3} ; cell M_1 about as long as its petiole.

Abdomen reddish brown, the caudal margins of the segments darker brown, the hypopygium somewhat brighter. Male hypopygium with the outer dististyle (Fig. 5) about as in *L. (E.) serotinella* but gently widened distally, broadest opposite the level of the subapical spine; subapical spine slender, straight; apical spine a little stouter and gently curved.

Habitat: North Carolina.

Holotype, ♂, Guilford College, Guilford Co., April 15, 1918 (J. S. Rogers); No. 46. *Allotopotype*, ♀. *Paratopotypes*, 2 ♂♂.

Limnophila vernata is one of the smallest species of the subgenus so far discovered. In its abundant dotted wing-pattern, the fly bears a superficial resemblance to *Dicranophragma*.

Subgenus PHYLIDOREA Bigot.

Limnophila (Phylidorea) *epimicta* n. sp.

General coloration of the thorax shiny reddish brown, the praescutum with a narrow dark brown median vitta; pleura largely dark brown; antennae brownish yellow; legs yellow; wings tinged with brown, the veins seamed with darker brown; a sparse spotted dark brown pattern, especially evident on the cephalic portion of the wing.

Female.—Length about 10 mm.; wing, 10.3 mm.

Rostrum brown, the palpi dark brown. Antennae obscure brownish yellow throughout; basal segment of scape relatively short; basal flagellar segments larger, the outer segments linear; verticils relatively conspicuous, much exceeding the segments. Head brown, somewhat pollinose.

Mesonotal praescutum shiny dark reddish brown with a narrow dark brown median vitta; lateral stripes indistinct; scutum dark reddish brown; scutellum brownish testaceous, darker medially; postnotum dark reddish, pruinose medially. Pleura generally dark brown, this color more evident as a transverse girdle on the anepisternum and sternopleurite, the pteropleurite paler. Halteres obscure yellow. Legs with the coxae obscure yellow, the fore coxae darker; trochanters obscure yellow; remainder of legs yellow, the extreme tips of the femora and the terminal tarsal segments darker. Wings with a strong brownish tinge, especially on the basal third, the costal region and wing-base brighter yellow; longitudinal veins conspicuously seamed with darker brown; a longitudinal oblitative line in cell *R*, crossing cell *1st M*₂ into cell *M*₃; small, still darker brown spots at origin of *R*s; *Sc*₂; along cord and outer end of cell *1st M*₂; fork of *R*₂₊₃; and the tip of *R*₁, including also *r*; the two last-described spots form the two ends of the otherwise yellow stigma; tips of veins *R*₂, *R*₃ and *R*₄₊₅ with brown spots; veins dark brown, *C* and *R* paler, *Sc* light yellow. Venation: *Sc* relatively short, *Sc*₁ ending just beyond the fork of *R*s, *Sc*₂ at its tip; *R*s relatively short, angulated and indistinctly spurred at origin; *R*₂₊₃ short, approximately equal in length to the slightly more arcuated basal deflection of *R*₄₊₅; *r* at tip of *R*₁ and near midlength of the sinuous *R*₂; cell *M*₁ a little longer than its petiole; *m-cu* beyond midlength of cell *1st*

M_2 ; vein *2nd A* strongly sinuous; anterior arcus preserved.

Abdominal segments brownish black, the caudal margins narrowly paler. Ovipositor and genital segment orange; tergal valves of ovipositor elongated, rather strongly up-curved.

Habitat: Florida.

Holotype, ♀, University of Florida Farm, Alachua Co., April 12, 1922, at light (Musselwhite). Sent by Professor Rogers.

Limnophila epimicta is an isolated species that seems to be correctly placed in the subgenus *Phylidorea*. The wing-pattern is different from any species of the genus known to the writer.

***Limnophila (Phylidorea) osceola* n. sp.**

Size small (wing under 7 mm.); legs obscure brownish yellow, the terminal tarsal segments darker; wings with a strong brownish yellow tinge, the stigma indistinct; abdomen brownish yellow, without a dark subterminal ring.

Male.—Length about 5.8 mm.; wing, 6.5 mm.

Female.—Length about 6 mm.; wing, 6 mm.

Male. Rostrum and palpi dark brown. Basal segment of antenna dark, the remainder of the organ light brown; flagellar segments passing from globular through short-oval into oval, the outer segments slender. Head dark gray, clear silvery-gray in front, with a blackish spot on either side behind.

Mesonotum shiny dark ferruginous to castaneous. Pleura with a sparse pruinosity. Halteres pale, the knobs a little darkened. Legs with the coxae shiny reddish ferruginous, the fore coxae darker; trochanters yellow; remainder of the legs obscure brownish yellow, the terminal tarsal segments passing into black; legs long and slender, especially the hind legs. Wings with a strong brownish yellow tinge, the base and costal region clearer yellow; stigma indistinct; veins a little darker than the ground-color. Venation: Sc_1 ending about opposite one-third R_{2+3} , Sc_2 at its tip; R_s short; r on R_2 at from two-fifths to one-third the length; cell M_1 about equal to its petiole; $m-cu$ varying from before to beyond mid-length of cell *1st* M_2 .

Abdomen brownish yellow, without a dark subterminal ring. Male hypopygium with the outer dististyle relatively short, the tip blackened, shallowly bifid, the outer spine acute. Inner dististyle shorter, the basal portion broader, the apical portion gently curved. Branched gonapophyses with the arms of moderate length only, one broader and a little shorter than the other, both pointed at tips.

Female. The type female agrees closely with the male except in the non-pruinose head where the bloom is apparently destroyed by moisture. The general coloration of the thorax is more yellowish and the legs are notably shorter and stouter. Abdomen dark-colored, probably discolored by eggs within.

Habitat: Florida.

Holotype, ♂, Tallahassee, Leon Co., April 23, 1924 (J. S. Rogers); No. 1. *Allotype*, ♀, T. 3 S, R. 15 E, Suwannee Co., April 28, 1924 (J. S. Rogers); No. 3.

This very small species suggests *L. lutea* Doane in its general coloration but is readily distinguished by the structure of the hypopygium.

***Limnophila (Phylidorea) persimilis* n. sp.**

General coloration of the thorax ferruginous; antennal flagellum yellow; fore femora (♂) brownish black, the bases obscure yellow; remaining femora brown with the pale bases a little more extensive; in the ♀ the femora and tibiae are uniformly pale yellow; wings pale yellow, only the apex very weakly infuscated.

Male.—Length, 6.5–7 mm.; wing, 6.5–7.5 mm.

Female.—Length, 8–9 mm.; wing, 7.8–9 mm.

Male. Rostrum and palpi dark brown. Antennae with the first segment dark brown, remaining antennal segments pale yellow, only the extreme outer flagellar segments weakly infuscated. Head light silvery gray, the vertex behind with an extensive darker area on either side.

Pronotum infuscated above, the sides broadly paler. Mesonotal praescutum shiny ferruginous to brownish ferruginous, more intense medially, paling into yellowish on the sides; scutellum more yellowish. Pleura and postnotum ferruginous, the color dulled by a very sparse microscopic pruinosity. Halteres pale, the knobs weakly infuscated. Legs with the coxae and trochanters pale ferruginous yellow; male with the fore femora brownish black, the basal quarter yellowish; apex of fore femur narrowly obscure yellow; middle and hind legs brown with nearly the basal third obscure yellow; tibiae dark brown, their bases paler; tarsi dark brown. Wings with a pale yellowish tinge, only the apex in cells R_2 to $1st M_2$ weakly infumed; stigma pale, distinct as a small pale brown spot beyond r . Venation: Sc_2 much longer than Sc_1 , the latter lying shortly before the fork of R_s ; R_s angulated and spurred at origin; r at tip of R_1 and shortly before midlength of R_2 ; $m-cu$ shortly beyond midlength of cell $1st M_2$.

Abdomen obscure yellow, the extreme lateral margins narrowly darker. Male hypopygium of the general type of *L. (P.) consimilis* Dietz, differing as follows: Outer dististyle much broader, only the tips weakly infuscated. Gonapophyses slender, the bifid pair with the arms slender, nearly equal in length, divided almost to their bases. Aedeagus relatively short, slender, entirely blackened.

Female. In the female, the femora and tibiae are uniformly pale yellow, the tarsi passing into dark brown.

Habitat: Indiana.

Holotype, ♂, Hanover, Jefferson Co., June 2, 1922 (J. S. Rogers); No. 70. *Allotopotype*, ♀. *Paratopotypes*, 3 ♂ ♂, 1 ♀.

This species was first sent to me as *L. (P.) lutea* Doane, which it resembles rather closely in general appearance but is readily separated by the structure of the hypopygium. The holotype is retained in the writer's collection.

Limnophila (Phylidorea) adustoides n. sp.

Male.—Length, 9–9.5 mm.; wing, 11 mm.

Female.—Length, 10–14 mm.; wing, 10.5–13 mm.

Bearing a strong superficial resemblance to *L. (P.) adusta* O. S. but more closely related to *L. (P.) auripennis* Alex. and allied forms, in the structure of the male hypopygium.

Antennal flagellum light yellow, the basal segment of the scape dark brown. Mesonotum and pleura shiny ferruginous. Legs with the femora yellow, narrowly tipped with black; tibiae yellowish brown, the tips narrowly darkened; tarsi passing into black. Wings with a strong yellow suffusion, the base and costal margin clearer yellow; wing-tip broadly darkened; stigma oval, dark brown, well-defined; a very narrow brown seam along the cord; the space between the branches of *Cu* suffused with brown; veins obscure yellow, clearer yellow in the costal and basal portions, darker along the cord. Venation: *Rs* angulated and short-spurred at origin; *r* at near two-fifths the length of *R*₂; cell 1st *M*₂ small. Abdomen obscure brownish yellow, with a subterminal black ring in the male; hypopygium dark ferruginous. Male hypopygium with the outer dististyle nearly straight, the apical split shallow, the outer spine small. Branches of the forked gonapophyses black, unequal in length. Aedeagus black, slender, about as long as or only a little longer than the forked gonapophyses.

Habitat: Indiana, Tennessee.

Holotype, ♂, Allardt, Fentress Co., Tennessee, altitude 1,650 feet, at light, June 6, 1924 (J. S. Rogers); No. 3. *Allotopotype*, ♀, June 3, 1924; No. 73. *Paratopotypes*, 9 ♀♀, June 3-26, 1924; Nos. 39, 48, 51, 55, 56, 58, 66 and 72. *Paratypes*, 1 ♂, 4 ♀♀, Scott Co., Tennessee, May 29-30, 1922 (J. S. Rogers); Nos. 4, 5 and 7; 1 ♂, 1 ♀, Clear Fork, near Burrville, Morgan Co., Tennessee, altitude 1,200 feet, at light, June 19, 1922 (J. S. Rogers); No. 6; 1 ♀, Hanover, Jefferson Co., Indiana, June 3, 1922 (J. S. Rogers); No. 71.

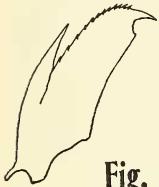


Fig. 1



Fig. 2

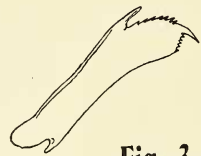


Fig. 3



Fig. 4



Fig. 5



Fig. 6

EXPLANATION OF THE TEXT-FIGURES.

Outer dististyle of male hypopygium of species of the subgenus *Ephelia* in Eastern North America. All drawings made to scale.

Fig. 1. *Limnophila (Ephelia) johnsoni* Alex.

Fig. 2. *L. (E.) aprilina* O. S.

Fig. 3. *L. (E.) irene* n. sp.

Fig. 4. *L. (E.) solstitialis* Alex.

Fig. 5. *L. (E.) vernata* n. sp.

Fig. 6. *L. (E.) serotinella* Alex.